(DRAFT 08/19/2004)
PROPOSED REVISIONS TO THE
BACTERIOLOGICAL ANALYSIS REPORT FORM
AND IMPLEMENTATION OF ELECTRONIC DATA SUBMITTAL

The Drinking Water Branch (DWB) is currently implementing changes in its data management system. The existing outdated data system is being replaced with a new database system known as SDWIS/STATE. This system has been developed and provided by EPA to assist states in meeting increasing demands for data reliability and the mandated reporting of Public Water Supply data to EPA's SDWIS/FED database. The new database system provides a common data structure that is currently in use in more than thirty states.

To effectively implement the new system, certain changes in the DWB's data management practices are required. As a first step, DWB is developing a new data entry application to accommodate entry of bacteriological sampling data into the new data system. DWB data-entry staff will be entering data into the system from these new forms. The forms currently in use for the reporting of bacteriological sampling data do not capture all the required data elements necessary for efficient utilization of the new system nor does the current data entry application provide for sufficient validation and edit checking to insure reliability and accuracy of data. The revised form has been designed to be compatible with the new data system and is expected to dramatically increase the performance and efficiency of DWB data processing.

As a second step, DWB is proposing to provide laboratories and water suppliers a tool to allow for the electronic submission of data through the use of Electronic Data Interchange (EDI). This EDI application is currently under development and will closely resemble the data-entry system being developed for in-house use by DWB. Laboratories and water suppliers electing not to participate in EDI will be asked to begin using the new forms for reporting the results of bacteriological analyses to DWB. Laboratories and water suppliers wishing to pursue the use of EDI may find the format of the new forms helpful when entering data into the EDI application.

What is EDI? How does it work?
The EDI application currently under development is an MS-ACCESS database application that can be used on a stand-alone or networked PC in a laboratory. The most typical use will likely involve data-entry staff at the laboratory entering bacteriological sampling records (creating batch files) into the EDI database. Tables contained in the database are used to validate data items such as PWS ID and SAMPLING POINT. These reference tables can be periodically replaced or updated via email or downloaded from a website. When data-entry is complete for a particular batch, the application will reformat the data into a format that can then be transmitted to DWB via email. The formatted text files arrive at DWB ready for loading to the SDWIS/STATE database. Records entered in the laboratory's EDI application can either be flushed from the system after generation of the text file or they can be preserved in "history" tables within the EDI application. The second option is recommended. If an error in the text file is encountered during loading to SDWIS/STATE the record will be rejected. DWB will transmit any rejected records back to the laboratory. The laboratory can then recall the specified records from the history tables into a new batch file, make the necessary corrections and then re-submit a text file of corrected records.

Options?

The EDI application will be provided to laboratories and water suppliers configured to function as described above. The data-entry screens will closely resemble the proposed paper forms and the data entry order on the screen will conform to the order suggested by the form. Laboratories wishing to alter the appearance of the data entry screen or rearrange the items on the screen to suit their own requirements and data-entry preferences (eg. prefer to use their own paper forms) should feel free to do so. The only requirement is that the final text file be produced in the specified format. Additionally, laboratories with existing Laboratory Information Management Systems (LIMS) may choose to develop their own programming procedures for producing the formatted text files. The table structures and program units contained in the EDI application should serve as a useful guide in this endeavor.

INSTRUCTIONS FOR BACTERIOLOGICAL ANALYSIS REPORT FORM

DESCRIPTION OF DATA ELEMENTS:

PWS ID
Public Water System ID. Uniquely identifies a water system. This is a required data element for all sampling reports. Sampling reports received without a valid PWS ID cannot be processed for compliance purposes. Each form can contain samples from only one PWS.

COMPLIANCE PERIOD (mmyyyy)
Indicates the monthly period to which the samples will be applied. Generally this is the month in which the samples are collected. However, if a Routine Sample is collected at the end of the monthly compliance period and the Repeat Samples are not collected until the first day of the following month, this data element allows the repeat samples to apply to the correct monitoring period (ie. the month in which the positive routine sample was collected.)

COLLECTION DATE (mmddyyyy)
This is the date the samples were collected. Each form can contain only samples that have been collected on the same day. Use a new sheet for each day that samples are collected.

LAB ID
This is the 5-digit code assigned by Kentucky to each laboratory certified to conduct bacteriological analyses. Uniquely identifies the laboratory that performs the analysis of the sample.

LAB RECEIPT DATE (mmddyyyy)
Optional data element to be used by the laboratory. Identifies the date the sample was received at the laboratory.

ANALYSIS DATE (mmddyyyy)
This is the date the sample was analyzed by the laboratory.

TOTAL COLIFORM ANALYSIS METHOD CODE
Coded value that represents the Total Coliform analysis method used for all the samples listed on the sampling sheet. (See revised list of Analysis Method Codes)

E. COLI ANALYSIS METHOD CODE
Coded value that represents the E. coli analysis method used for any samples listed on the sampling sheet that have been analyzed for E.coli following a positive Total Coliform result.

SAMPLE TYPE
Coded value that represents the type or purpose of the sample collected. There are only three acceptable values for this code. **Routine** (**RT**) samples (formerly known as Distribution samples) are those collected for the purpose of compliance with the Total Coliform Rule and are collected on a monthly basis. **Repeat** (**RP**) samples (formerly known as Check samples) are collected after the PWS has been notified that a Routine sample has tested positive for Total Coliform. Repeat samples must reference the Laboratory Sample Number of the original positive Routine sample. (See discussion under heading **Original Lab Sample Number**). **Special** (**SP**) samples are collected in response to conditions or situations specific to the PWS such as line breaks, emergency repairs, line extensions, etc. Special samples are NOT to be used for determinations of compliance and cannot substitute for any failure to collect the required minimum number of Routine Samples nor can any Special Samples be considered a substitute for Repeat Samples

SPECIAL SAMPLE REASON
Coded value indicating the reason special samples were collected. Special Sample Reason codes are listed in the key on the report form.

REPLACEMENT SAMPLE (Y or BLANK)
Indicates that the sample is a replacement for a sample that has resulted in confluent growth (CNFG) or Too Numerous to Count (TNTC) but negative for total coliform.

LOCATION CODE
This is the 3-digit code for the Sampling Point referencing the address or location where a sample was collected within the distribution system of a PWS. A list of approved Sampling Points is stored in the Kentucky Drinking Water Database (SDWIS/STATE). Routine (**RT**) compliance samples will be rejected if the Sampling Point is not reported on the form or is not listed as an approved site in the database. When reporting a set of Repeat Samples (**RP**), the repeat sample taken from the original total coliform positive site must be reported with the same Sampling Point identified on the original positive routine sample. It is not expected that the upstream and downstream Repeat Samples will be collected from approved sites. The pre-defined generic Sampling Points **RPU** and **RPD** should be used to identify the upstream and downstream Repeat Sampling Points respectively. If the original sample was RPU or RPD, then use **RPO**. Sampling Points for Special samples (**SP**) should be entered on the form but need not be listed as approved in the database.

REPEAT LOCATION CODE
This element characterizes the Sampling Point for the Repeat Sample (**RP**) as one of three types: Original (**OR**), Upstream (**UP**), or Downstream (**DN**). This element is required if the Sample Type is **RP**. If a Repeat Location Code is entered for any other Sample Type the entry will be ignored by the data system. If Repeat Location Code is not entered for a Repeat Sample (**RP**), the sample will be rejected by the data system and may result in a violation.

SAMPLE TIME
Time (24 hr) the sample collection was collected. Must consist of 4 numeric characters. Do not indicate AM or PM. Examples: 0710 = 7:10 am; 1325 = 1:25 pm

FREE CHLORINE
Free Chlorine Disinfectant Residual. A PWS using chlorine-based disinfectants other than chloramines is expected to report free chlorine residual measurements. Reporting of total chlorine residuals is optional for these systems. Values are expressed as mg/L or ppm.

TOTAL CHLORINE
A PWS using chloramines for disinfection is expected to report total chlorine residual values. Values are expressed as mg/L or ppm.

LAB SAMPLE NUMBER
This number provides a **unique identifier** for all bacteriologic samples analyzed by a particular laboratory within a given year.   Can contain up to 8 characters.

ANALYSIS TIME
Time (24 hr) the sample collection was analyzed in the laboratory. Do not indicate AM or PM. Examples: 0710 = 7:10 am; 1325 = 1:25 pm

RESULT
Enter the total coliform count if coliform bacteria are present and a count is appropriate to the analytical method being used. If coliforms are not present, leave blank. Do not enter 0. This column will also accept the values **TNTC** and **CNFG** for "Too Numerous to Count" and "Confluent Growth".

TOTAL COLIFORM (P/A)
Indicate Presence (**P**) or Absence (**A**) of coliform bacteria in the sample. If a Total Coliform Count is entered as **TNTC** or **CNFG** <u>and</u> Total Coliform (P/A) is entered as **A**, the laboratory shall advise the PWS to collect a Replacement Sample (replacement of a Routine Sample) to insure that the required number of Routine Samples are analyzed during the monthly monitoring period. If Total Coliform Count is entered as **TNTC** or **CNFG** <u>and</u> Total Coliform (P/A) is entered as **P**, then the PWS will be required to collect a set of three Repeat Samples (**RP**).

E. COLI (P/A)
Following a determination that a sample is total coliform positive (Total Coliform (P/A) = P), the laboratory must analyze for the presence/absence of E. coli bacteria. Use this column to indicate the presence (**P**) or absence (**A**) of E. coli. Make no entry in this column if the total coliform analysis was negative (Total Coliform (P/A) = A) and no analysis was performed for E. coli.

LAB SAMPLE NUMBER OF ORIGINAL SAMPLE
When a Routine Sample (RT) is positive for total coliform, the PWS must collect a set of three Repeat Samples (RP). Each of the Repeat Samples must reference the Lab Sample Number of the original coliform positive Routine Sample. Failure to record the Original Lab Sample Number on a Repeat Sample will not cause the data system to reject the sample; however, if the Original Lab Sample Number is not recorded on each of the three Repeat Samples, the data system will not be able to confirm compliance with the requirement to collect three Repeat Samples and a violation may be issued. It is also advisable to reference an original Lab Sample Number when submitting a Replacement Sample.